Forest Insect & Disease Management

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EVALUATION OF SLASH PINE MORTALITY ON THE FORT PICKENS UNIT GULF ISLANDS NATIONAL SEASHORE, FLORIDA

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ABSTRACT

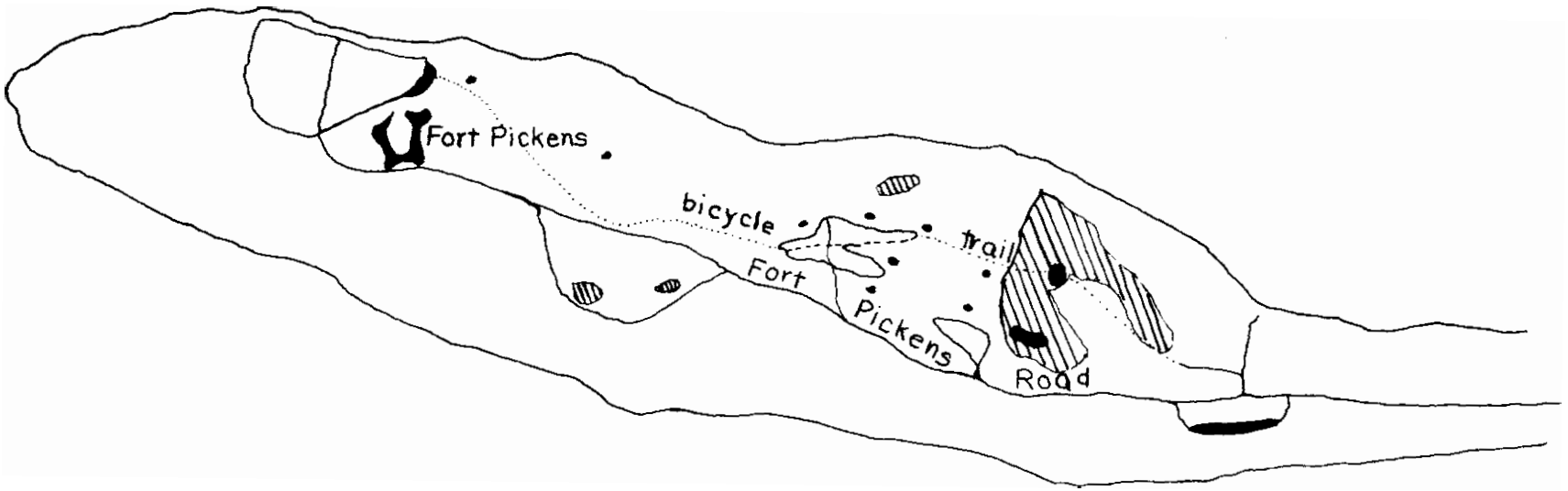
Slash pine mortality on the Fort Pickens Unit of the Gulf Islands National Seashore was found to be the result of infestations of engraver beetles (Ips calligraphus and Ips grandicollis) and the black turpentine beetle (Dendroctonus terebrans). Inundation of low areas on the island by salt water in September 1979 may have stressed the trees sufficiently to result in the initial outbreak. In addition to possible stress induced by high salinity, overmature trees in high use areas may have had a role in supporting the outbreak. While the infestation appears to be in decline, control recommendations are suggested to minimize further mortality and hazards to park users.

INTRODUCTION

The Gulf Islands National Seashore (NPS) is a group of barrier islands in the Gulf of Mexico off the coast of Florida and Mississippi. The Fort Pickens Unit of the seashore is located south of Pensacola, Florida (figure 1) and contains picnic areas, group and individual family campgrounds and several areas included in the National Register of Historic Places.

There are 500-600 acres of upland forest sites on the Fort Pickens Unit (park official communication), a major component of which is mature to overmature, natural slash pine. This component serves to stabilize the constantly changing barrier island ecosystem and contributes shade and an aesthetically pleasing environment to the 165-site campground. Soils under this vegetation type are characterized as excessively drained sands with groundwater within 16-22 inches of the surface.

SOUTHEASTERN AREA, STATE & PRIVATE FORESTRY
USDA FOREST SERVICE, ATLANTA, GA 30309



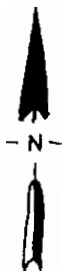


Figure 1.--FORT PICKENS UNIT
GULF ISLANDS NATIONAL SEASHORE
FLORIDA

1 mile

Legend

Areas of long-dead timber
Active Ips-infestation

On July 25, 1980, the National Park Service requested the assistance of Forest Pest Management in diagnosing the cause of mortality on approximately 100 acres of slash pine within and proximal to the campground complex.

METHODS

On August 6, 1980, Forest Pest Management visited the Fort Pickens Unit to consult with park officials and observe the dying trees. Increment cores were taken from several trees representing various lengths of time since death. Insects feeding in the cambium region were collected for identification. Additionally, general site conditions were noted and compared for areas of both dead and living trees. Special emphasis was accorded the high-value trees within and adjacent to the campground complex.

Finally, on August 20, 1980, the FPM Aerial Survey Team (Doraville, GA) photographed the primary areas of mortality at a scale of 1:8000.

RESULTS

The aerial photo survey showed 10 discrete areas of red topped Ips killed timber involving from one to seven trees scattered on the island. In addition, four larger (2-100 acre) areas of older, dead timber apparently killed by Ips beetles and/or stress from salt water intrusion were located.

A variety of crown symptoms were observed including long-dead needleless trees, dead red-topped trees, and fading yellow crowned trees in the initital stages of death. Red pitch tubes characteristic of cambium feeding beetles were observed on the boles of most dead trees.

Adults and galleries of three species of cambium feeding insects were observed or recovered from trees in all stages of crown decline. These include two species of Ips engraver beetles (Ips calligraphus and Ips grandicollis) and the black turpentine beetle (Dendroctonus terebrans). No green-crowned trees were noted to be infested and few of the killed trees contained active brood at examination time.

The needleless dead trees seemed to be located within and at the periphery of the shallow, freshwater ponds located in a natural area (figure 2). Red- and fading-crowned trees were adjacent to these ponds with only scattered mortality occurring on the drier sites that had been developed as the campground (figure 3).

Figure 2.--Needleless dead trees within and at peripheny of shallow, freshwater pond.

Figure 3.--Pine mortality within campground.

DISCUSSION

The first mortality was observed by park officials in the winter/spring of 1980 and a recent increase in the rate of decline of the slash pine resource resulted in the call for assistance. Consultations with park officials disclosed that much of the unit had been overwashed by the ocean during hurricane Fredrich in September 1979. Salt water had inundated the lower areas of the island reaching depths of 2 feet, remaining for as long as one to two weeks in some areas. Some herbaceous plant species, once common associates, were absent (park officials communication). The pattern of the insect infestation suggests that it began in these areas where the trees may have been stressed for extended periods or killed by the high salinity.

The three species of bark beetles recovered are generally considered secondary pests (i.e., preferring to attack trees weakened by some other factor). Further, the absence of green-crowned freshly attacked trees implies that the infestation is in a state of decline. For the most part, beetle-infested trees are confined to once-inundated or overmature trees and infestations are declining or have stopped with the recovery of the site from salt water intrusion. Nevertheless, the presence of some heavily infested trees and trees killed within the campground is reason for concern. Occurrance of any additional stress factors could precipitate a beetle population build-up. Sufficiently high beetle populations could force attacks on trees normally unattractive to them.

By their very nature, trees in campgrounds are under stress (soil compaction, bark scrapes, lantern burns, etc.). As such, they are particularly attractive to Ips and turpentine beetles. High-value trees in heavily used ares infested by these insects should be cut and destroyed before brood beetles can emerge and threaten residuals. Trees may be buried, or sprayed with insecticides. It is important that cut material be quickly removed from the site since dispersing beetles are attracted to resinous odors.

Should beetle activity within the campground become serious enough to justify a preventive spray program, the insecticide lindane is registered for this purpose.

If beetle activity outside of the campground becomes intolerable, several control options are available. These include prompt salvage of infested material, piling and burning, insecticide treatments, and felling and leaving infested trees. Specifics of these control procedures as well as directions for a preventive spray program will be supplied immediately upon request of the Park Service.

REFERENCES

Anonymous. 1980. Environmental assessment for the development concept plan. Fort Pickens Unit, Gulf Islands National Seashore, Florida. USDI, Park Service.

Carothers, W. A. 1980. Aerial photo survey of pine mortality on Fort Pickens Unit of Gulf Islands National Seashore, Florida. USDA, Forest Service.